

**USAID–SUPPORTED HEALTH INFORMATION  
SYSTEM IN THE UKRAINE**

By:

Mary Church  
Alan Lifson

Submitted by:

LTG Associates, Inc.  
and  
TvT Associates, Inc.

Submitted to:

The United States Agency for International Development/Ukraine  
Under Contract No. HRN-I-00-99-00002-00

January 2000

**MEDS**

Monitoring Evaluation & Design Support

---

*USAID-Supported Health Information System in the Ukraine*, was prepared under the auspices of the U.S. Agency for International Development (USAID)/Ukraine under the terms of the Monitoring, Evaluation, and Design Support (MEDS) project, Contract No. HRN-I-00-99-00002-00. The opinions expressed herein are those of the authors and do not necessarily reflect the views of LTG Associates, TvT Associates, or USAID.

Information about this and other MEDS publications may be obtained from:

Monitoring, Evaluation, and Design Support (MEDS) Project  
1101 Vermont Avenue, N.W., Suite 900  
Washington, DC 20005  
Phone: (202) 898-0980  
Fax: (202) 898-9397  
[ltg@earthlink.net](mailto:ltg@earthlink.net)

---

## ACRONYMS AND FOREIGN TERMS

---

AFP	Acute Flaccid Paralysis
BASICS	Basic Support for Institutionalizing Child Survival
BCG	Tuberculosis vaccine
CA	Cooperating agency
CDC	Centers for Disease Control and Prevention
DOTS	Directly observed therapy
DPT	Diphtheria, pertussis and tetanus
ELISA	Enzyme-linked immunosorbent assay
EPI	Expanded Programme on Immunization
FAP	Feldsher-Acusher Point (outpatient point staffed by health assistant and midwife)
Feldsher	Health assistant
FY	Fiscal year
GOU	Government of Ukraine
HIS	Health information system
HIV/AIDS	Human immunodeficiency virus/acquired immune deficiency syndrome
HMIS	Health management information system
IR	Intermediate Result
MEDS	Monitoring, Evaluation and Design Support
MMWR	Morbidity and Mortality Weekly Report
MOH	Ministry of Health
NGO	Nongovernmental organization
NIS	Newly Independent States
PATH	Program for Appropriate Technology in Health
SES	Sanitary and epidemiological station
SO	Strategic Objective
STD	Sexually transmitted disease
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VPD	Vaccine preventable disease
WHO	World Health Organization

---



# CONTENTS

---

## ACRONYMS AND FOREIGN TERMS

EXECUTIVE SUMMARY.....	i
------------------------	---

I. INTRODUCTION.....	1
----------------------	---

II. EVALUATION OF THE HEALTH INFORMATION SYSTEM (HIS) PROJECT.....	3
A. Background and Project Objectives.....	3
B. Implementation Strategies .....	4
C. Implementation Activities .....	5
D. Constraints.....	7
Project Continuity.....	7
Collaboration Among Implementers.....	7
Incomplete Fulfillment of Project Objectives .....	8
E. Accomplishments.....	9
Information System.....	10
Management Reform.....	12
Working Groups.....	12
Sphere of Accomplishment .....	13

III. LESSONS LEARNED.....	15
A. Definition of Objectives and Terminology .....	15
HIS/HMIS .....	15
Surveillance.....	15
Focus on Management .....	16
Participant Input .....	16
Computer Strategy.....	16
Extension of Approach.....	16

IV. NEXT STEPS .....	19
A. Infectious Diseases.....	20
Completion of Vaccine Preventable Disease (VPD) System.....	20
Tuberculosis .....	22
HIV/AIDS .....	24
Sexually Transmitted Diseases (STDs).....	27
Other Infectious Diseases.....	28
B. GENERAL ISSUES .....	28
Disease Surveillance .....	28
Information Technology.....	30

---

Integrated Information System.....	31
Involvement of International Agencies and Donors .....	32
Collaborative Development of a Medium Term Strategic Plan.....	33
C. SUMMARY.....	33

## **ANNEXES**

A: Scope of Work (from USAID/Ukraine).....	37
B: Review Team's Terms of Reference.....	45
C: Persons Interviewed .....	47
D: Itinerary.....	51
E: Examples of HIS Analysis .....	55

## **EXECUTIVE SUMMARY**

---

In the third quarter of 1999, the United States Agency for International Development (USAID)/Ukraine commissioned a review of the Health Information System (HIS) activity it supports in the Ukraine. This review had two primary objectives:

- to assess the accomplishments and constraints to date, and
- to make recommendations for future work, building on results and incorporating lessons learned.

The review team spent November 14–27, 1999, in the Ukraine, both in Kiev and at sites where the system is being used. Project collaborators based in the United States were interviewed in person and by telephone prior to this trip.

### **A. HEALTH INFORMATION SYSTEMS (HIS) PROJECT**

The HIS project, formally named the “Ukraine Infectious Disease Program: Health Information Systems (HIS) and Management Support,” focuses on improving the use of information to manage the prevention and control of the vaccine preventable diseases that are targeted for childhood immunization. The project began in the fourth quarter of 1997, with funds for the first year of operation, and an informal commitment to continue for three years. The project was initially implemented by three collaborating agencies: the Basic Support for Institutionalizing Child Survival (BASICS) program, the Centers for Disease Control and Prevention (CDC), and the Program for Appropriate Technology in Health (PATH). Subsequently, PATH assumed all responsibility for the project.

At the time of this review, the project had implemented the HIS in three pilot oblasts (Lviv, Odessa, and Zhytomir), the HIS had received approval as the national standard, and the project was rolling the system out to the remaining oblasts in the country.

The project has been a tremendous success in the three pilot oblasts, and its support during the national rollout process will substantially facilitate adoption of the HIS as the national standard. One accomplishment of the program is introducing a technically sound information system for vaccine management and tracking of immunization data. However, the larger accomplishments have been:

- introducing the practice of using information as a tool in managing resources and service delivery, and
- encouraging the collaboration of public health officials, epidemiologists, and clinicians involved in different aspects of the prevention and control of vaccine preventable diseases.

Health officials can point to ways they have used the system’s analytic tools to identify problems and can use the system’s tools to assess the results of remedial actions. Using information to improve immunization levels and reduce contraindication rates are two very positive examples. The establishment of working groups at all levels to guide development and implementation has strengthened relations between the curative and preventive branches at operational, managerial, and policy levels, particularly for oblasts and raions.

The constraints the project has faced have been largely institutional. One major constraint has been irregular funding, including less funding than was anticipated at the project’s initiation of this project. Another major difficulty during the early stages of this project was the absence of clear agreement on the project’s objectives and strategies among the implementing partners and USAID. The project’s major technical constraint has been a delay in the introduction of disease surveillance into the information system. This technical constraint is explained, at least in part, by the institutional constraints.

In implementing the management and institutional reforms that made the HIS project a success, a number of lessons have been learned that can be applied in extending the system to other diseases.

- **Build on existing skills.** The HIS project strengthened the management and delivery of an existing service. The system’s utility was immediately clear to MOH personnel, who claimed ownership of the system quite quickly and became advocates for its adoption.
- **Participant input.** The process of introducing the HIS emphasized active participation from system users at all levels and reporting lines. In addition to providing technical input, this process strengthened collaboration among health personnel in the preventive and curative branches.
- **Focus on management.** The project remained focused on using information for management. This facilitated the development of precise indicators that led to fairly clear responses from the health system.

By 1997, when the project began, a process of de facto health sector decentralization had begun and oblasts had become increasingly responsible for paying for recurrent costs (except salaries). That process has continued, and oblasts now have major responsibility for managing resources. Oblast- and raion-level input into the system are key to having it adopted for active use in management.

## **B. NEXT STEPS**

In identifying opportunities for expanding the approach used by the HIS project, the review team has looked for situations with similar enabling factors, including a strategy for disease control and prevention. An information system cannot be built to support



management before the management strategy for disease control and prevention is in place.

### **C. HIS TO SUPPORT DISEASE CONTROL AND PREVENTION**

#### **Current Vaccine Preventable Disease HIS**

Completion of the rollout for national implementation of the HIS for vaccine preventable diseases is the main task remaining for the current HIS project. The project should be able to complete these activities by September 2000, its originally projected completion date. However, sustaining this system after rollout will require ongoing support from the Ministry of Health and other health officials. Responsibility for financial and technical support as well as for supervision, training and monitoring will need to be assumed by the individual oblasts and other Ukrainian health officials.

#### **Tuberculosis**

Tuberculosis is acknowledged to be a major public health problem in the Ukraine by both national and international experts. Many of these experts believe that the current prevention and control strategies for tuberculosis, including widespread and repeated chest x-rays to screen asymptomatic persons, waste resources that could more usefully be applied to treatment. Both the World Health Organization (WHO) and the World Bank have advocated the adoption of the international standard of directly observed therapy (DOTS) as the national standard for the management of tuberculosis. The basic routine information system that supports the DOTS strategy is well known, and could be adapted for use in the Ukraine to monitor disease prevalence, transmission, and drug resistance, as well as to manage the resources required to support the strategy. Of all the options investigated, support of the DOTS strategy with an HIS that uses the same approach as for vaccine preventable diseases has the most promise for integrating information into management processes.

#### **Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS)**

Despite the continuing spread of HIV/AIDS throughout the Ukraine, there is no national strategy for control and prevention of what is being increasingly recognized as a major public health problem. This includes the lack of a comprehensive and appropriate strategy to collect epidemiologic data for trend analysis and estimating the magnitude of the HIV epidemic in the Ukraine. HIV testing currently being conducted largely focuses on either protecting the blood supply or detecting individual cases for medical diagnosis and treatment. While improving individual case management and data is a very important effort, it does not have the same role as a routine HIS. A first step in improving the information system would be to develop a sentinel surveillance system that observes international protocols.

#### **Sexually Transmitted Diseases (STDs)**

Like HIV/AIDS, the incidence of other STDs appears to be increasing at disturbing rates. The current systems for STD management encourage individuals to either not seek STD

testing or to seek treatment outside the formal sector. Therefore, there is no way to truly estimate the magnitude and trends of the STD problem in the Ukraine. While sentinel surveillance, including active case detection, would clearly be useful, it is not useful to introduce an HIS until the management strategy is determined and the disincentives to use the public health care system are addressed.

#### **D. GENERAL INFORMATION SYSTEMS ISSUES**

##### **Disease Surveillance**

Improvement of disease surveillance was often mentioned as a goal; deficiencies in the current surveillance system could certainly be reduced. While simply improving data collection techniques is of limited value, linking data collection to action-oriented planning and management (as was done in the current HIS project) is of considerable value.

##### **Information Technology**

There are many compelling reasons to provide information technology. The question is not really whether, but how. While information technology is often provided only in the context of a larger program, the option of providing information technology as a form of general infrastructure support should be considered.

##### **Integrated Information System**

The review team endorses USAID's goal of having a single, integrated reporting system. The question is how to go about it. The management structure of the MOH is fragmented and will remain so even for some time after the establishment of the planning division. As a way of providing immediate practical support and preparing for the introduction of an integrated system for management information, USAID could consider technical assistance to use currently available information more effectively for management.

##### **Multilateral Collaboration**

All of the information system initiatives proposed presume collaboration with other international agencies. USAID's support of transparent management processes to guide this collaboration is most appropriate.

##### **Medium-Range Plan**

The MOH is forming a strategic planning unit. Support of creation of a medium-range plan would provide an opportunity to influence the planning process and the information used to guide these decisions. Such a plan would also create a framework for collaborative planning between the MOH and donor agencies.





## I. INTRODUCTION

---

The United States Agency for International Development (USAID) Mission in Kiev, Ukraine, asked the Monitoring, Evaluation and Design Support (MEDS) project to review the “Ukraine Infectious Disease Program: Health Information Systems (HIS) and Management Support” (hereafter called the HIS project).<sup>1</sup> The Mission asked the review team to evaluate the constraints, accomplishments, and lessons learned from the HIS project. Based on these observations, the team was asked to advise on ways the project could be extended, particularly in the areas of surveillance for human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), sexually transmitted diseases (STDs), and tuberculosis. (The scope of work is included in annex A and the Review Team’s Terms of Reference is in annex B.)

Given the fact that the HIS is currently used in only three oblasts, and nationwide rollout began as this evaluation began, the current report has more the flavor of a midterm review than a final evaluation. However, the project is going to expand more rapidly than projected in the strategic framework,<sup>2</sup> and USAID/Ukraine wishes to assess the project’s results at the present time in order to plan other potential investments in information systems.

Given USAID/Ukraine’s reasons for commissioning this review, approximately 60 percent of the time was spent evaluating the current HIS project and approximately 40 percent assessing opportunities for USAID extending activities in the area of health information.

The project’s operations were reviewed and a possible extension of HIS activities were discussed with potential collaborators in the Ukraine from November 14–27, 1999. Preceding this trip, representatives of the project’s collaborating partners were interviewed in the United States, and project documentation was reviewed. (A list of persons contacted and the itinerary are in annexes C and D, respectively.)

---

<sup>1</sup> The HIS project addresses Strategic Objective (SO) 3.2b.1.2 of USAID/Ukraine’s strategic framework, “Strengthened health management information surveillance systems of infectious diseases.” Its results are measured by Intermediate Result (IR) 3.2b.1.2.1, “Oblast-level health information and surveillance system implemented at the national level.”

<sup>2</sup> The strategic framework result projects increasing use of the HIS through 2002, when 20 oblasts are expected to use the system. In fact, 24 oblasts should be using the system in 2000.



## **II. EVALUATION OF THE HEALTH INFORMATION SYSTEM (HIS) PROJECT**

---

The new HIS is used by personnel at all levels of the health pyramid, from providers at Feldsher-Acusher Point (FAP), ambulatory, polyclinic, and hospital levels, to managers in both sanitary and epidemiological station (SES) and clinical care branches at raion and oblast levels. Representatives of all of these levels of system use were interviewed, as well as national coordinating officials. The project aims at improving the use of information to manage health resources and service delivery. The review team focused on confirming whether this has been accomplished, and on understanding the key lessons to be drawn from its implementation, strategy, and objectives.

### **A. BACKGROUND AND PROJECT OBJECTIVES**

The need for an improved information system to manage the procurement, distribution, and delivery of vaccines had been identified during an earlier USAID/Ukraine project. In the early 1990's, epidemic diphtheria broke out in many of the nations that had been a part of the former Soviet Union, including the Ukraine. In response to this epidemic, USAID/Ukraine asked the Program for Appropriate Technology in Health (PATH) to provide humanitarian assistance for the procurement of diphtheria vaccine in order to mount an adult mass immunization campaign in the Ukraine. In attempting to monitor vaccine requirements, distribution, and coverage, it became clear that the existing HIS was not adequate to provide the required information. At the conclusion of the humanitarian assistance project, it was recommended that technical assistance be provided to improve management and disease surveillance related to infectious diseases.

Similar problems had been identified in other nations that, like the Ukraine, used the information system that had been in place during the Soviet period, and USAID had supported several activities designed to strengthen the information system. In Kyrgyzstan, the Basic Support for Institutionalizing Child Survival (BASICS) project had implemented a program to improve vaccine management and coverage monitoring for the diseases targeted by the World Health Organization's (WHO) Expanded Programme on Immunization (EPI). The Centers for Disease Control and Prevention (CDC) had strengthened national disease surveillance systems in several of the Newly Independent States (NIS).

In the Ukraine, USAID asked PATH, BASICS, and the CDC to work with USAID/Washington to formulate a project to improve the information system. The initial source of funds to support the program came from an allocation for fiscal years (FY) 1996 and 1997, which had been earmarked for infectious disease; the project was to focus on strengthening the parts of the information system related to infectious diseases. While funding was assured for only the first year of the program, which focused on pilot testing in one oblast, it was expected that funds would be found to extend the program to a total of three years. The program's designers were asked to project implementation

activities through the third year and outline plans for a nationwide rollout of the system. During the first three quarters of 1997, planning meetings held in the United States and two site visits to the Ukraine resulted in the current HIS project.

The program's work plan stated: "The intent of this program is to provide assistance to the [government of Ukraine] GOU to strengthen its management of infectious disease prevention and control efforts by improving access to and utilization of accurate, appropriate, and timely health and management information." While the implementation details were to be established in consultation with the Ministry of Health (MOH), it was stipulated that the program would include management of vaccine preventable diseases.

Technical direction and coordination were assigned to PATH, which had already established an office in the Ukraine. Technical expertise from BASICS and the CDC was projected to carry out specific tasks. Project activities began in the fourth quarter of 1997.

## **B. IMPLEMENTATION STRATEGIES**

The program's work plan outlined the following strategies that would guide the activities to be undertaken:

- **Information to be included in the system.** The term HIS often refers to disease surveillance, including morbidity, mortality, and their associated populations; health outcomes; and, service delivery coverage. For the purposes of this program, the term HIS was expanded to include the resources necessary to manage preventive services, specifically vaccines.
- **Management reform.** The program would focus on the use of information to manage the prevention and control of infectious disease, and would specifically include reform of some management processes.
- **Integration of management activities.** The administrative structure of the health system in the Ukraine includes several separate reporting lines that combine in disease control and prevention. Research institutes, at both national and oblast levels, provide the technical expertise to establish policy. The SES monitors morbidity and mortality related to infectious diseases and manages the resources used to address these diseases. The clinical division is responsible for providing preventive and curative services to patients. The program planned to establish working groups with members from each of these groups to determine and support program activities.
- **Bottom-up approach.** The project would rely on the oblast working group, which would include personnel from facilities and from raion management, to advise on the management and HIS reforms to be undertaken.
- **Automation.** Computers were available for SES use at most oblasts, but they were not widely available at raion levels. With the agreement of



USAID/Ukraine, the program was designed to focus on management reforms that could be undertaken independently of automated support.

There was some opposition to these strategies. The MOH believed that the provision of computers was an essential element in strengthening the HIS. The CDC believed that strengthening the national disease surveillance system would be a more productive strategy than reform of local management. These differences of opinion regarding strategy were never fully resolved and will be discussed in more detail in the following sections of this report.

### **C. IMPLEMENTATION ACTIVITIES**

Two major types of implementation activities were undertaken:

- the creation of working groups to provide technical advice and institutional support for changes in policy and procedures, and
- the introduction of new reporting forms and analytic tools and processes at all levels of the formal health system.

By late 1997, when project activities began, the oblast was the focus of operational management of the health care system. While the national level set policy and standards, aside from salaries, most recurrent expenses were met from oblast resources, not from the national budget. This movement towards decentralization has continued. The oblast working groups have been more active than the national working group in determining the technical and operational details of the system.

The first working group was established at Lviv oblast to advise on and to pilot test the management and information systems reforms to be undertaken. This working group took the Kyrgyz immunization system model, which had been developed by BASICS with USAID support, and adapted it to local needs. Raion officials and then providers and facility managers were trained in its use. The HIS has been used in Lviv oblast since the beginning of 1998. Both system and documentation were reviewed and revised several times during the pilot test phase of 1998.

During May 1998, the CDC took the lead in organizing a 2-week epidemiology course for Lviv epidemiologists and pediatricians, and the other implementing partners (BASICS/PATH/USAID) presented material collaboratively. In June and July 1998, through the NETS program, a group of 10 participants attended a CDC epidemiological training in Atlanta and a subsequent practicum in various offices in the states. Both of these activities were well received by participants.

In September 1998, officials from the two other pilot test oblasts, Odessa and Zhytomir, participated in a workshop that analyzed the results of the Lviv experiments. Based on the results from Lviv, these officials advocated use of the system in their oblasts, and working groups were formed to introduce the system in these two oblasts during the

fourth quarter of 1998. The new HIS has been used in Odessa and Zhytomir since January of 1999.

As the HIS began to expand to other oblasts, it became clear that a national working group would be needed to coordinate nationwide implementation and use of the system. The national working group was formed in September 1998; its members include senior SES officials and ministry officials, as well as representatives of research institutes. It has provided advocacy and support for the policy directives necessary for nationwide adoption of the HIS. On October 6, 1999, based on the experience in the three pilot oblasts, the MOH directed that the system be used nationwide by January 2000. In the fourth quarter of 1999, the project sponsored meetings where officials from five to six oblasts assembled to learn the process of forming the working groups and introducing the system. Officials from the three pilot test oblasts have participated in these meetings and are forceful advocates in helping their colleagues understand the application and usefulness of the system.

The following list summarizes project activities to date. PATH program officers based in Kiev participated in all of these activities, often joined by short-term technical advisors from one or more of the implementing partners.

### **1997**

Quarters 2–3	Project formulation
Quarter 4	Establish national and oblast (Lviv) working groups Lviv adapts Kyrgyz model for vaccination information system to local needs

### **1998**

Quarter 1	Pilot testing begins in Lviv
Quarter 2	2–week epidemiology course
Quarter 3	5–week NETS training Lviv workshop presents first results Establish national working group
Quarter 4	Working groups organized in Odessa and Zhytomir

### **1999**

Quarters 1–3	System operates in 3 oblasts
Quarter 4	MOH adopts system for nationwide use Introduction of system to remaining oblasts

### **2000**

Quarter 1	System used nationwide
-----------	------------------------

## **D. CONSTRAINTS**

The major constraints faced by the HIS project arise from institutional difficulties and incompatibilities on the part of the implementing agencies, rather than from technical problems or lack of support from the Ukrainian side. These difficulties have had the effect of limiting some expected project outputs.

### **Project Continuity**

As noted earlier, in the description of the background and project objectives, while the project was envisaged as a 3-year effort, leading to nationwide use of the new HIS, funding was assured for only the first year. It was anticipated that USAID/Ukraine would be able to allocate funds for continuing the project after the first year, but they were never guaranteed.

This arrangement has made planning difficult, both for the cooperating agencies (CAs) and for USAID. Since the project's approval by USAID/Ukraine in 1997, the USAID Mission has experienced several staff turnovers, during which this project was apparently not supported by adequate internal documentation. Ongoing advocacy for the project has come from USAID/Washington, where the project's institutional memory is housed. This has produced a situation in which Mission officers have been expected to find funds to support a project in which they had little sense of ownership. In the end, no additional funds were allocated for FY 1998. The absence of funding has contributed to the delay in introducing disease surveillance elements into the system. Additional funds were made available in FY 1999, to carry the project through the first quarter of 2000. However, it would appear that a time line ending in the third quarter 2000, as anticipated, should suffice to complete the introduction of the new HIS. It is not entirely clear whether this time line will be adequate to complete introduction of the new HIS nationwide.

### **Collaboration Among Implementers**

As noted earlier, in the description of the background and project objectives, there was disagreement among the CAs on overall strategy from the outset of the project, with the CDC advocating an approach that would include strengthening the national disease surveillance system.

In addition to this difference in technical perspective, several other factors contributed to weakening collaboration among implementers. In terms of the bureaucratic structure of the U.S. government, USAID and the CDC are on a roughly equal footing, with each agency having its recognized sphere of expertise and operations. USAID often asks the CDC to add its internationally recognized expertise to address a specific problem, and usually this collaboration is quite productive. However, when differences of opinion do arise, irreconcilable disagreements can emerge from the fact that USAID is funding, and in effect managing, a parallel agency with its own technical mandate and authority. In the case of the HIS project, personality conflicts are reported to have exacerbated the problem, so that it proved impossible to reconcile competing technical agendas, and the CDC withdrew from the project in the fourth quarter of 1998.

At approximately the same time that the HIS project was formulated, a California–based branch of Rotary International identified an opportunity to contribute information technology to the Ukraine health system. The Rotary club invested considerable effort in securing funding for this contribution with the expectation that it could be coupled with the HIS project. (The basis for this expectation is not entirely clear at this point.) When it became evident that the strategic decision to make the HIS implementation independent of automated support meant that it would not be possible to join the Rotary effort with the HIS effort, the HIS project was associated with misunderstandings not of its own making.

While the withdrawal of the CDC and the misunderstanding with Rotary International did not have a major effect on the project’s results, USAID and the CAs all spent significant time and effort in wrestling with these issues. In addition, these conflicting perspectives may have led to misconceptions regarding the purpose and implementation of the HIS among those who had not been a part of the process from the beginning, and particularly among newly posted USAID officers in Kiev.

BASICS, a centrally funded USAID project, completed its central contractual term in the second quarter of 1999, and BASICS completed its participation in the HIS project several months earlier. The withdrawal of BASICS was anticipated well in advance, and presented no constraint on HIS implementation.

### **Incomplete Fulfillment of Project Objectives**

The project’s work plan included a set of six indicators designed to reflect its effect on the practices of health system personnel. The first two indicators address disease surveillance by measuring the sensitivity and specificity of Acute Flaccid Paralysis (AFP) surveillance.<sup>3</sup> (The remaining indicators will be discussed in the following section, Accomplishments.)

When the project was designed, in 1997, there was no AFP surveillance in the Ukraine. In 1998, this surveillance began, using WHO protocols for case definition and follow up. In 1998 and 1999, in the three pilot oblasts, the expected number of AFP cases has been detected (at least one case per 100,000 children under age 15), and appropriate laboratory follow up made for each case. By the time the project was underway, the anticipated focus on AFP had become less important.

While disease surveillance was included in the project’s work plan and had been requested by the MOH, no disease surveillance has been included to date in the new HIS. (It is part of the project’s work plan for the first quarter of 2000.) It was expected that the CDC would assume a major role in this aspect of the information system, and the CDC’s withdrawal from the project precluded this contribution. After the CDC’s withdrawal, the remaining partners decided not to introduce AFP surveillance because they believed that it would not create a model for disease surveillance in general.

---

<sup>3</sup> AFP surveillance is recommended by WHO to certify that the surveillance system is sensitive enough to register expected cases of paralysis that are not related to poliomyelitis. This condition must be met for a country to be certified as polio free.

While the Ukraine has a disease surveillance system that appears to operate fairly well in terms of timeliness of reporting, at least for infectious diseases, it suffers from a lack of case definitions. The result is inconsistency in attributing cases to a specific diagnostic category. For example, there is not a consistent case definition for diphtheria, and the HIS working groups have devoted some attention to exploring the variations in definition. No consistent definition for this disease has emerged, and many working group members apparently do not consider it an essential priority. The reporting error introduced by lack of consistent case definitions is not known, but SES staff interviewed appeared to believe that the errors would be minor in comparison to other sources of error, like diagnosis and treatment of disease in the “gray economy.”

The project plans to initiate disease surveillance for one or two selected diseases in 2000 in the three pilot oblasts. The surveillance machinery will include consistent case definitions and indicators designed to guide operational responses. While the project’s failure to introduce disease surveillance earlier represents a missed opportunity, it does not appear to have compromised the technical viability of the HIS. It should be noted that the lack of funding for FY 1998 and the withdrawal of a key partner were major contributors to delayed introduction of disease surveillance.

The project’s work plan also included an analysis of economic impact. This study was to be undertaken by the CDC and was not completed, although some preparatory work was apparently done. Some indication of the economic impact could be inferred from improvement in vaccine utilization rates, which will be discussed in the next section, Accomplishments.

## **E. ACCOMPLISHMENTS**

In general, the HIS project has accomplished what it set out to do: “improve the quality, analysis, and utilization of information needed for infectious disease prevention and control.” The project’s information system concentrates exclusively on vaccine preventable diseases. Within this scope, the project has introduced a simple information system that helps managers and service providers improve the quality of care and management of resources.

Perhaps more important than this technical accomplishment are the management innovations that emerged from using the system. The working groups provided an opportunity for those involved in differing aspects of service delivery to adopt a common agenda for the management and delivery of vaccines. At the operational level, managers and providers use the information system for microplanning and for managing and advocating for resources.

### **Information System**

The set of six indicators included in the project’s work plan were mentioned in the preceding section, and the project’s failure to address the two disease surveillance indicators have been discussed. The four remaining indicators address population estimates, coverage estimates, vaccine supply, and contraindications. A consistent set of

reporting forms and analytic tools has been introduced at all levels of the system. Users find the tools easy to use. These tools have been used in annex E to illustrate the changes in management introduced through the HIS.

### Population Estimates

The information system that the project replaced relied on birth rates to estimate target populations. In recent years, birth rates have declined fairly sharply, and SES officials believe that the use of birth rates has become an increasingly unreliable method to estimate population. In addition, the target populations had changed several times, reflecting changes in the immunization protocol, but the procedures in the old system had not been modified to account for these new protocols. Therefore, coverage estimates were not reliable.

The new system relies on birth records to estimate population. These estimates are revised to reflect actual births and migration information to estimate target populations. Users of the system find these methods easy to use and believe that they provide very accurate estimates of target populations.

### Coverage Estimates

Coverage estimates had become unreliable because of the denominator problems discussed in the preceding paragraphs. Improvement of denominator calculations has improved coverage estimates. With the earlier system, providers and managers did not monitor coverage; with the new HIS, they now use WHO methodology to monitor monthly cumulative accomplishment against the target using a simple graphing technique. Graphic comparison of performance in different geographic areas helps identify areas that need special attention.

Oblast and raion officials use the coverage graphs to explain to local officials the effects of lack of vaccine and to advocate effectively for funding.

Annex E, graph 1, shows coverage by raion and town in Lviv. Managers use graphs like this to identify areas that need further attention. Graph 2 shows the effect on coverage of vaccine shortage in Lviv.

### Vaccine Utilization

In the earlier system vaccines were provided based on planned activities, with no analysis of utilization rates.<sup>4</sup> With the new system, utilization rates are calculated and vaccine

---

<sup>4</sup> Utilization rate, for the purposes of this discussion, is the ratio of vaccine used to vaccine required, to deliver a single vaccination. For example, if a vial contains 10 doses, and 12 vials are consumed to deliver 100 doses, then the utilization rate is 1.2. Some overutilization is to be expected; protocols must be observed to maintain the efficacy of the vaccine and to discard vials that may have been opened for a small number of clients. Less densely populated areas can be expected to have higher utilization rates than more

distributed on the basis of doses given and anticipated. Simple graphs have been introduced to assist in monitoring utilization at provider and managerial levels.

A decrease in the amount of vaccine consumed per vaccination given may indicate improvement in scheduling and outreach of immunization services.<sup>5</sup> Comparison of vaccine utilization in 1999 indicates that in Lviv, utilization is decreasing, but not in Zhytomir and Odessa. Officials in all 3 oblasts are investigating. Managers have a tool and use it to monitor resources.

Annex E, graph 3, illustrates the differences in trends in vaccine utilization.

### Contraindications

In the earlier system, contraindication rates were not monitored, and it is believed that unnecessarily conservative interpretation of contraindication protocols led to low coverage rates and decreased quality of care. With the new system, providers and managers monitor contraindication rates with graphs and areas with high rates are reviewed.

Decrease in contraindications can be seen in all oblasts. Annex E, graph 4, illustrates this trend. This decrease is attributed to supportive supervision of areas and facilities that had high rates. Project implementers and participants believe further reduction of the rate (below about 10 percent) will require a national policy change to redefine the contraindications. For the most part, they also agree that the number of contraindications should be reduced.

### **Management Reform**

The effective use of the analytic tools described in the previous paragraphs represents one of the most significant accomplishments of the HIS project. Virtually all of the MOH personnel interviewed explained that when the project was introduced, they believed that their information system was quite good and provided all of the information required to manage resources and service delivery. After using the new HIS for only a few months, its results were perceived as much more useful than the old system.

The HIS has been incorporated into supervisory procedures at raion and oblast levels. Managers at these levels use the system to spot areas that require supervision to improve performance and use the results reported through the system in regular (usually monthly) meetings with the staff. All managers interviewed could point to progressive improvements in vaccine utilization and contraindication rates as a result of using the system. Some pointed out that management time was also used more efficiently, since they could easily see which areas seemed to be problematic.

---

densely populated areas. While a relatively high utilization rate may be normal for a given area, higher than normal rates should be investigated.

<sup>5</sup> Immunization service indicators should be interpreted as a group. For example, if improvement in utilization is accompanied by a decline in coverage, further investigation is required.

During the 1990's, peripheral levels of government, like cities, raions, and oblasts, have assumed increasing levels of responsibility in allocating funds for recurrent costs, other than salaries, in the public health sector. Currently vaccines are procured by the oblast, and sometimes by the raion. SES managers cite examples of using the graphs produced with the new HIS to convince local authorities to allocate funds for vaccine purchase.

Both providers and managers view the use of information to improve management of immunization services as a welcome and important innovation.

### **Working Groups**

The working groups at oblast level include members from SES, curative services, and the laboratory, as well as representatives from raion and facility levels. These personnel do not routinely collaborate on specific technical issues, even though their efforts may be directed towards the same service. Use of the working group to stimulate communication and collaboration among all the specialists has been welcomed.

### **Sphere of Accomplishment**

The sphere of activities in which these accomplishments have been achieved should be clearly understood. While the project is called "Health Information System and Management Reform," the information system introduced limits itself to reporting and monitoring service delivery and vaccine resources for the immunizations included in the childhood vaccine regimen. It is planned to introduce elements of disease surveillance for selected vaccine preventable diseases in 2000. Disease surveillance statistics and information related to other infectious diseases are not currently included in the new HIS.





### **III. LESSONS LEARNED**

---

The experience of the HIS project implementation provides a number of lessons that can be used to guide other information systems initiatives in the Ukraine.

#### **A. DEFINITION OF OBJECTIVES AND TERMINOLOGY**

The course of the HIS project provides a number of examples where misunderstanding of presumably common objectives led to disagreement on priorities and activities. Lack of agreement on basic terminology inhibits transparency in decision-making. Several terms that have been used in the project documentation and by implementers have had inconsistent and misunderstood definitions.

##### **Health Information System/Health Management Information System (HIS/HMIS)**

The term health information system (HIS) usually refers to health statistics, such as morbidity and mortality rates and service coverage. The term health management information system (HMIS) usually includes both health statistics and the resource information that supports service delivery, such as finance and drugs and supplies. While the project work plan noted that the HIS proposed fit the definition of an HMIS, the term HIS remained poorly understood. The use of the term HIS, as applied to the activities of this project, has also caused some confusion, since the information collected is limited to that related to the control and prevention of vaccine preventable diseases.

##### **Surveillance**

The term surveillance was not clearly defined in the project documentation and the information to be collected through surveillance has been a matter of discussion. In HIS documentation, the term disease surveillance is more frequently used than the single word surveillance. As described above, in the context of the HIS project, disease surveillance includes consistent case definitions and action-oriented indicators. The CDC's definition of surveillance also emphasizes data quality and use of the information for action.

USAID/Washington is in the process of formulating a program on surveillance. The working definition of surveillance in this context is quite broad, encompassing all the information usually included in an HMIS. It includes disease statistics and service delivery coverage statistics, as well as human, financial, and material resources.

#### **B. FOCUS ON MANAGEMENT**

During the implementation process, the HIS project has maintained a focus on action-oriented information that can be used for management of service delivery. The practical

quality of HIS information is often mentioned by project participants and is doubtless a major contributor to the project's accomplishments.

### **C. PARTICIPANT INPUT**

HIS implementers have actively sought the advice of service providers and managers at all levels. This process has certainly built a sense of ownership. When asked what they would like to see changed in the current implementation, participants replied that they had been consulted throughout the development process and the system reflected their input.

The active solicitation of participant input has also meant that the HIS builds on local strengths. The process of system development has resembled the process of continuous quality improvement, with a cycle of problem identification, development of an action plan, and review and refinement of the plan.

### **D. COMPUTER STRATEGY**

As mentioned in the earlier section on background, an initial project strategy was to introduce management information reforms that did not require information technology for implementation. Computers are generally available at the oblast level, and PATH has developed a computer application to support HIS data entry and analysis at oblast and national levels. This application includes trend graphs and bar graphs to compare immunization coverage or contraindication rates between raions. The technology was not ignored, but is not a precondition for use of the HIS system. Project participants agreed with this strategy (as does the review team), because it permitted project development to focus on the use of information, not the introduction of technology.

At the same time, project participants at all levels and other officials frequently mentioned the introduction and upgrading of information technology as the most important next step in providing information systems support. Given international reliance on information technology for efficient production and dissemination of information, the question is not whether information technology should be used, but how it can be supplied in such a way that it will be used effectively.

### **E. EXTENSION OF APPROACH**

Much of the success of the HIS project comes from three factors. First, the system built on the experience of the participants and made existing systems and procedures more effective. Second, the project actively solicited input from operational managers and providers. Third, the project focused on information required to make specific decisions in managing health care. In exploring ways to extend the approach, the review team tried to identify similar opportunities for developing information systems that respond directly to management needs. The constraint faced in assessing potential opportunities is that immunization is a fairly easy issue to tackle. The techniques for monitoring and managing immunization programs have been developed and refined for many years and

in many parts of the world. Management strategies for other health care issues, and the information required to support them, are not as well defined.



## IV. NEXT STEPS

---

Based on the lessons learned from the HIS project review, the team was asked to suggest possibilities for the future direction of USAID's support of health information systems, with specific attention to potential expansion to HIV/AIDS, other sexually transmitted diseases (STDs) and tuberculosis. Although the brief time in the Ukraine did not allow for a comprehensive assessment of information needs related to these complex infectious disease problems, the team was able to form impressions and recommendations related to these areas. In addition, some general recommendations were developed, related to the implementation of health information systems for any health problem, whether infectious or noninfectious disease related.

The fast absorption of the HIS project's management reforms and information system demonstrates the positive effects of a well-designed and well-implemented information system initiative. The analysis in the following section on Infectious Diseases compares opportunities for information systems initiatives to support control and prevention of specific infectious diseases. This analysis concludes that a new strategy for tuberculosis detection and treatment promises real improvements in disease control and cost effective use of resources. Support of the development of an information system to support this strategy would provide managers with an important tool for addressing a major public health concern.

In addition to supporting strategies addressed at specific diseases, an information system can also be of value in managing the overall service delivery network. These information systems were described as HMIS (health management information systems), or as surveillance systems, using the broad definition of USAID/Washington's surveillance working group. There is no question that an integrated information system will be essential to support operational management, resource allocation, and planning of health services. The main constraint to developing such a system is that the management processes are not well defined. The MOH is undergoing restructuring, based on a recent functional review. While the national level sets policy, de facto acquisition and management of resources continues to decentralize to oblast and local levels. Elaboration of a comprehensive management information system seems premature while the management processes are evolving. There is considerable value in supporting the development of sound management practices based on information, but the emphasis should be on management, not information systems per se. Several opportunities for information systems to support overall management of service delivery are discussed in some detail below. While investment in these types of systems is clearly important, they can be a bit riskier than information systems that address a specific disease concern. This is especially true when the management structures and processes are as fluid as they currently are in the Ukraine.

Each of the information systems opportunities explored, from strategies to address a single disease to overall management of service delivery, involves close coordination with other donor groups, as well as the MOH. Recent donor coordination activities,

supported by USAID, provide an important forum for discussion of mutual concerns and complementary activities. Agreement on a medium-term health sector plan, facilitated and coordinated by the nascent strategic planning unit, would certainly be a useful planning framework for all the collaborators. Agreement on information to monitor the plan provides an opportunity to develop a corporate culture that values and uses information.

### **A. INFECTIOUS DISEASES**

The first topic discussed is the successful completion of national rollout of the current vaccine preventable disease (VPD) HIS. The remaining topics discuss other infectious diseases. In making recommendations regarding expansion of the system into other infectious diseases, particular attention was given to whether the disease has a well-developed strategy for control and prevention. Without such a strategy, it is not possible to define the information required for management.

#### **Completion of Vaccine Preventable Disease (VPD) System**

The current childhood immunization schedule for the Ukraine includes BCG vaccination (for prevention of tuberculosis), vaccination against diphtheria, pertussis and tetanus (DPT), polio, measles, mumps, rubella, and hepatitis B. Surveillance for acute flaccid paralysis appears to be routinely conducted in the oblasts visited. The HIS introduced through the project is also being used to monitor the vaccine supply. A number of individuals noted that this HIS has improved coverage rates and management for all childhood vaccines, even those not emphasized by the project.

Shortage of funds has meant that not all oblasts could afford all the vaccines required by this schedule. It appears that the six EPI vaccines (BCG, DPT, polio, and measles) are routinely given in each oblast. Current national policy recommendations also include routine immunization against mumps, rubella and hepatitis B. However, these vaccines are more expensive and not always offered as part of the routine system. For example, in the Lviv oblast, over 1,808 cases of mumps were reported in the last 10 months, indicating that either coverage is suboptimal or that the vaccination strategy needs to be reevaluated. Routine use of rubella vaccine is inconsistent, in part reflecting the expense of the vaccine. recently added a second dose of measles vaccine to the immunization schedule for adolescents and young adults. The combination measles-mumps-rubella (MMR) vaccine is not routinely given, again reflecting the high cost, although Zhytomir will be buying MMR starting next year.

There was strong interest in universal immunization against hepatitis B, but limited resources and the cost of the vaccine made this inconsistently applied throughout the country. In the Zhytomir oblast, the team was told that a high priority for hepatitis B immunization was vaccination of infants born to mothers who were hepatitis B infected. Medical personnel with parenteral exposures were also a high priority for hepatitis B immunization. In some oblasts, such as Zhytomir, hepatitis A and other vaccines were offered for a fee at service points outside the formal system. Although hepatitis A was believed to be a major problem, the expense of the vaccine made routine immunization

prohibitive. In the Lviv oblast, 510 cases of hepatitis A were reported in the last 10 months; asymptomatic cases of hepatitis A probably make this problem even greater. Influenza was also recognized as an important countrywide source of morbidity, but in no oblast visited was influenza immunization routinely recommended. In the Zhytomir oblast, influenza vaccine is available for a fee.

**Conclusion:** The health information system seems well suited to monitoring distribution and delivery of standard childhood vaccines and has good applicability for control of other vaccine preventable diseases. This system will soon become the countrywide standard. **Consistent with current plans, the old system of monitoring vaccine delivery should be eliminated, and the new system (the system introduced through the HIS project) should be introduced.**

There are several issues with regard to sustainability. By adopting the HIS as the national standard, the MOH commits itself to maintaining the system. It is estimated that the recurrent costs for stationery will be approximately US \$500 per oblast. Both project and MOH officials believe that these funds will be found for the years after 2000, at which time the project-supplied stationery will have been depleted. Some oblasts may not have the information technology to handle the HIS software, and it is not clear whether they will be able to purchase this equipment themselves.

The project's sustainability also depends on its ownership. A major contribution of the technical assistance has been to support the process of institutionalization. As the system begins to work nationwide, the project will also need to support the process. A major strength of the health information system was the interdisciplinary collaborative working groups, bringing together epidemiologists from the preventive branch and pediatricians from the curative branch. Support for these working groups to continue meeting and monitoring data (as well as addressing potential problems at the local level) will need to be assumed by the oblast level. Finally, there are a number of critical issues related to supervision, training and monitoring. Although the system is just now being rolled out on a national level, with initial training seminars being conducted by PATH, the project is apparently scheduled to be completed in March 2000. **To ensure that there is adequate time not only for the initial training but for follow up at the local level (so that protocols are being correctly followed and forms correctly completed), the project activities should continue a few months longer, until September 2000. This would allow the project to have three full years of operation as initially planned.** Ultimately, the responsibility for supervision and monitoring will need to be assumed by the oblast and other Ukrainian health departments.

### **Tuberculosis**

Tuberculosis cases are continuing to rise in the Ukraine, and virtually all health authorities interviewed mentioned this as one of the most concerning health problems.

Between 1990 and 1997, the incidence of new tuberculosis cases rose by 53 percent, increasing from 32 cases per 100,000 population to 49.1 cases per 100,000. In 1997, there were 24,883 new tuberculosis cases, of which 93.5 percent were pulmonary and 6.5



percent were extrapulmonary. A number of officials interviewed mentioned tuberculosis as a social disease. However, an epidemiologist in Lviv noted that while tuberculosis had previously been a disease seen most commonly in the elderly, in alcoholics and in prisoners, it was now increasingly being seen in younger adults and children. He also noted that the rate of a positive tuberculin skin test in 7-year olds had increased from approximately 16 percent to over 30 percent.

In addition to the growing total number of cases, strains of tuberculosis resistant to one or more antibiotics are also becoming increasingly common. In the Odessa oblast, of approximately 2,000 tuberculosis cases in the past year, 20 percent had mycobacterial strains resistant to two or more antibiotics; strains resistant to multiple antibiotics are not uncommon. Good national data on the prevalence of drug resistance are not available. Despite emerging resistance, treatment alternatives are often limited. Although it is recommended that treatment for active tuberculosis start with three or four drugs, an oblast or clinic may have just one drug, such as isoniazid, to treat active cases. According to one oblast physician, if resistance is detected, treatment will sometimes have to continue with the resistant drug but at a higher dose. Drug procurement and distribution is highly decentralized.

Follow up of tuberculosis patients is often incomplete, especially for those patients that are homeless, alcoholic, or otherwise disadvantaged. Directly observed therapy (DOTS) is not performed. Many patients therefore do not receive a full course of appropriate therapy. It is estimated that approximately 10 percent of cases recur; this includes many treatment failures. Patients may be hospitalized for the full course of treatment (instead of being treated as outpatients), and receive posttreatment convalescent care in tuberculosis sanatoriums.

Information that is collected on active tuberculosis cases is primarily clinical, including anatomic site and clinical presentation. Drug sensitivity testing is not routinely performed because of the expense and testing delays. It can take 3 months or longer for culture and drug sensitivity results on a specific patient.

Several types of tuberculosis screening data are routinely collected. Information on BCG vaccination and tuberculin skin testing is collected on all children. BCG vaccine is routinely given at birth to all children. All children also receive annual tuberculin skin (Mantoux) tests through age 15. If the Mantoux test is negative (<5 mm) at ages 7 and 14 years, a second and possibly third BCG vaccine is given at this time. According to a representative of the National Institute of Phthisiology and Pulmonology, one new case of tuberculosis is detected for every 14,500 skin tests performed.

Chest x-rays also are annually routinely performed on high-risk persons. In this case, high risk refers to those who are believed more likely to transmit tuberculosis to others; this category includes teachers, restaurant workers, and many other service or trade workers. In 1998, it was reported that 16.3 million chest x-rays were performed. The estimated yield was one tuberculosis case detected for every 1,800 x-rays performed; if restricted to those individuals who were asymptomatic, this yield would be even lower.

A number of professionals questioned the need for so many x-rays, and believed that one reason such wide scale x-ray screening continued was its financial benefit to certain sectors of the medical establishment. However, the reality is that financial constraints are making it impossible to perform all x-rays stipulated by the present Ministry of Health guidelines.

**Conclusion:** There is little doubt that the Ukraine is undergoing a major tuberculosis epidemic, complicated by growing polydrug resistance. Limited resources for diagnosis and treatment represent major issues, with significant delays in diagnosis and limited drugs to treat resistant strains. **However, there does not seem to be an overall coordinated national approach to the management of tuberculosis.** Some of the prevention strategies, such as yearly Mantoux tests on all children and annual chest x-rays on large numbers of adults, are of questionable benefit and divert resources from more critical priorities. In addition, some of the most important information, such as prevalence of drug resistance, does not appear to be collected on a consistent countrywide basis.

**Any health information system that is developed should be in the context of an overall systematic prevention plan for tuberculosis control. One specific approach being advocated by WHO and the World Bank that would lend itself very well to a health information system is the DOTS strategy.** Key elements of this strategy include standardized, short-course chemotherapy regimens provided under direct observation and a monitoring and evaluation system for program supervision. Sufficient drugs and diagnostic materials are provided. The recording and reporting system for evaluation of patient progress and treatment outcome provide core information for effective management and health care services. The system includes a laboratory register (including results of sputum examination and additional bacteriologic evaluation, if indicated), patient treatment cards (detailing intake of medications and contact with health workers), and a tuberculosis register (listing people commencing treatment and progress towards cure). A standardized cohort analysis, which uses certain indicators (including treatment progress), is part of this protocol, as is monitoring drug supply and distribution.

WHO and the World Bank are both forceful advocates for introduction of the DOTS strategy in the Ukraine. USAID has also provided technical expertise in this effort. Information systems work is included in the work plan developed by World Bank. The issues surrounding introduction of the DOTS strategy were discussed at some length with WHO, and it appears that USAID participation in this area would be welcome.

One option is to introduce DOTS (and the supporting health information system) as a pilot project in one or a few oblasts. Similar to the health information system to improve vaccine coverage, this would allow for demonstration and evaluation of acceptability and effectiveness, with extension (if successful) to other oblasts through the country. **The current health information system for vaccine preventable diseases has shown benefit in management of inventory and resources as well as monitoring coverage rates; these benefits would have applicability to a health information system for the**

**DOTS system.** In addition to the information routinely collected as part of the DOTS protocol as recommended by WHO, additional data, including prevalence of drug resistance (perhaps on a representative sample) would be of great benefit and value.

### **HIV/AIDS**

Although it is estimated that HIV appeared in the Ukraine about 1987, primarily spreading through sexual transmission, HIV dramatically increased in 1995, when the epidemic began to involve injection drug users. The number of reported new infections among injection drug users rose from approximately 1,000 in 1995 to approximately 8,000 in 1999. HIV has also begun to significantly affect female sex workers and other sexually active persons, including patients attending STD clinics. It is estimated that about 1,000 HIV-infected pregnant women will deliver in the coming year; of those HIV-infected pregnant women who have been identified in the past, less than half (30–40 percent according to one estimate) belong to identified risk groups. The situation in Odessa, one of the epicenters of this epidemic in the Ukraine, illustrates the growing magnitude of this problem. Approximately 60 percent of HIV-infected persons are injection drug users, although the number of persons infected through sexual transmission is growing. Serologic surveys identified HIV seroprevalence rates of 19 percent among injection drug users, 3 percent among female sex workers, and .35 percent among women attending antenatal clinics. The number of reported HIV cases far exceeds the number of reported AIDS cases, reflecting the relatively recent emergence of the Ukrainian epidemic. In Odessa, it is estimated that there are 12,000 HIV-infected persons and only 522 AIDS cases. Antiretroviral therapies are expensive and in very short supply, and most AIDS patients do not receive them. In Odessa, the highest priorities for use of zidovudine were for prevention of perinatal transmission and postexposure prophylaxis for health care workers.

Reliable information is not available on the actual numbers of HIV-infected persons in the Ukraine, let alone the number infected within specific risk groups. One of the largest uses of the HIV test is for screening the blood supply; these test kits are supplied by the national government. (Blood is also tested for hepatitis B, hepatitis C and syphilis). Additional HIV test kits may be purchased by the oblasts and used for specific risk groups; each oblast defines those groups to be evaluated. Groups identified for HIV testing have included drug users, female prostitutes and male homosexuals, as well as tuberculosis and STD patients. In some oblasts (e.g., Odessa), testing is routinely offered and typically performed for all women attending antenatal clinics, while in other oblasts (e.g., Lviv) testing is recommended but optional. HIV testing is also performed for medical indications, such as in the evaluation of patients with chronic dermatitis or chronic pneumonia. Shortage of testing kits was a frequently described problem.

There is no standardized protocol concerning which priority groups are tested for HIV, nor is there a uniform strategy for selecting who is tested from within these groups. Although information on HIV cases is collected and forwarded to the national level with age, sex, name and risk factor, it is not clear that the total numbers reported in any way reflect the true prevalence. Testing may occur for any number of reasons. A patient may

undergo testing because they are seeking HIV–related treatment in a public facility, with testing performed to confirm the diagnosis. Some anonymous testing also occurs; in this case, personal identifiers, as well as demographic and other information are not supplied, and repeat testing cannot be excluded. Finally, some serologic surveys are conducted, such as those described above from Odessa.

There also does not seem to be a national HIV prevention strategy that is being implemented at the local level. Most of the actual contact with high-risk groups (including harm reduction for injection drug users and condom distribution) is being conducted by nongovernmental organizations (NGOs). In some areas, HIV prevention efforts are hampered by limited funds for essentials, such as condoms. Recently, the government has become more interested in developing ways to support NGOs and helping to coordinate their efforts.

A recent proposal by the United Nations Children’s Fund (UNICEF) (still in the planning and discussion stage) involves supporting programs to help prevent perinatal transmission. According to this proposal, HIV testing would be conducted on a large scale, either for the whole country or at least in those oblasts where the HIV epidemic is most pronounced. Zidovudine would be given to the mother and postnatally to the newborn, according to standard protocols. The project is expected to start in early 2000, possibly as early as January.

**Conclusion: It was the strong impression of the team that the Ukraine does not currently have a comprehensive HIV/AIDS prevention strategy.** A variety of NGOs, international donors, and local governmental organizations are implementing HIV prevention programs, but there does not seem to be overall coordination at the national level. **Any specific recommendations for health information systems for HIV/AIDS should be viewed in the context of the need to develop an overall HIV testing and prevention strategy.**

There are many issues related to HIV testing and determining HIV seroprevalence rates. The actual prevalence and incidence of HIV infection cannot be reliably determined. At-risk individuals may not actively seek testing, especially since therapies are very limited. There is a shortage of HIV test kits and funding to purchase these kits at the local level. Most importantly, as noted above, **there does not appear to be a comprehensive strategy to estimate HIV infection in the Ukraine.**

The ways in which HIV testing is done needs to be reevaluated. There are three major reasons for which HIV–antibody testing is performed, and it is important that they not be confused: screening of donated blood for blood safety, epidemiologic surveillance of HIV prevalence, and diagnosis of infection in individuals. With respect to epidemiologic surveillance, one option is to develop a sentinel surveillance system for higher risk groups (such as injection drug users, female sex workers, STD clinic attendees, and tuberculosis patients), as well as strategies for testing those in the general population, including women attending prenatal clinics. If use of zidovudine to prevent perinatal transmission were adopted in oblasts or on a national level, routine HIV testing on all

pregnant females would be an important component. WHO and the Joint United Nations Programme on HIV/AIDS (UNAIDS) have developed a number of detailed protocols for HIV serosurveillance that would be of great use in the Ukraine, and their advice should be sought. **If any of the protocols described above were implemented, there would be a valuable role for health information systems in helping to support and monitor these activities.**

Although beyond the scope of this specific consultation, it should be noted that there are also issues related to the choice of specific test kits (including quality control and sensitivity/specificity), and the specific testing algorithm for identifying a specimen as HIV positive. Given the expense of confirmatory tests, HIV testing in resource-poor settings is very often done with just the enzyme-linked immunosorbent assay (ELISA). WHO/UNAIDS has also developed guidelines for simple/rapid assays in HIV testing.

Although also beyond the scope of this consultation, it should be noted that there is also an important role for the evaluation of behavioral data. Behavioral, epidemiological and social information about HIV-infected individuals can help better define at-risk groups. If targeted interventions for these populations were developed, with behavior change as the primary outcome, pre-intervention knowledge, attitude and practice studies would be useful in designing the most effective strategies. Follow-up surveys could help determine whether the desired behavior changes and risk reduction had occurred. At the same time, in discussing information needs, it is also important to distinguish between more detailed research studies or scientific surveys, and basic health information collected for routine management. WHO/UNAIDS has discussed the concept of behavioral surveillance, focusing on evaluating a few key indicators (such as number of sexual partners and use of condoms) in specific sentinel populations. Their advice on which, if any, information should be collected, and in what context, should also be sought.

### **Sexually Transmitted Diseases (STDs)**

Aside from HIV, the other sexually transmitted diseases on which information is routinely collected are syphilis and gonorrhea. In Odessa and possibly other oblasts, all pregnant women are routinely screened for these two STDs.

The number of syphilis cases in the Ukraine has dramatically risen over the last several years. Blood samples for syphilis may be drawn at a variety of settings, but testing is conducted at one or a small number of central laboratories within an oblast. Although a few individuals may be treated as outpatients or in their home areas, the typical syphilis patient is hospitalized for inpatient treatment for several weeks or longer in a central oblast facility that may be far from her/his home.

In contrast, gonorrhea is often diagnosed and treated at a wide variety of local facilities, and treatment by private practitioners is common. Patients who receive such treatment are typically not reported to the health care system, and there are no reliable data on the number of gonorrhea cases that are currently occurring in the Ukraine. One STD specialist in Odessa expressed concern that antibiotic resistance to commonly used gonorrhea treatments is growing, although population-based data in this area are lacking.

Several clinicians expressed concern about a variety of other STDs, including chlamydia, candida and other causes of vaginitis, and herpes simplex. Screening for these other STDs is not routinely conducted. In addition to their morbidity in STD patients, concern was expressed about STDs, such as herpes and cytomegalovirus, that can result in congenital or perinatal infection; according to the chief pediatrician in Odessa, over half of perinatal mortality is due to such infections.

**Conclusion:** The lack of accurate data about incidence and prevalence of STDs is a major problem, and there is room for improvement in many areas. Limited funds for STD screening, diagnosis, treatment and prevention represent major issues. However, there does not seem to be an overall coordinated national approach to the management of STDs, including STDs among adolescents and young adults. The current punitive and restrictive system for identifying and treating cases is likely to discourage individuals from seeking STD screening and treatment in public facilities, and will continue to facilitate the STD epidemic being hidden and underground. To obtain more reliable estimates of STD prevalence, well-conducted sentinel surveillance studies on samples of the population may be useful. If syndromic management is believed to be more appropriate in settings with limited diagnostic facilities, this information could also be recorded and evaluated. However, given the many problems with STD diagnosis and reporting, it is difficult to recommend a specific health information system. Any system that is developed should be in the context of an overall prevention plan and major changes in the way STDs are currently diagnosed and treated.

### **Other Infectious Diseases**

The health professionals interviewed identified a variety of other infectious disease issues. These included intestinal diseases transmitted by food and water as well as viral hepatitis; hepatitis A, B, and C were all mentioned as important concerns.

**Conclusion:** General issues related to disease surveillance are discussed below. With respect to other types of health information, health officials will need to decide and set priorities about which information is most important to collect, given limitations in trained personnel and other resources. For certain diseases that are vaccine preventable, such as hepatitis B, the current health information system may provide valuable assistance in monitoring immunization coverage and delivery.

## **B. GENERAL ISSUES**

During discussions with stakeholders, several general issues regarding information systems emerged.

### **Disease Surveillance**

Many officials interviewed identified disease surveillance as an important issue, although the interpretation of what was implied by this term varied. A number of problems with the current disease surveillance system were identified. Lack of national standard case

definitions was a frequently described issue. For example, different clinical definitions have been used to identify cases of diphtheria. Developing standard, uniform case definitions was believed to be the responsibility of the Ministry of Health. Other case definition issues include whether laboratory confirmation was required and whether asymptomatic individuals with a specific infection (laboratory-confirmed) would be considered a case. As a related issue, laboratory facilities and diagnostic capabilities are limited. In Zhytomir, serologic testing was previously used to confirm all cases of measles and rubella. For measles, the policy is now to use a strictly clinical case definition, with serologic testing only if the diagnosis is uncertain.

A number of other surveillance-related issues were brought up in the discussions. There are currently at least 56 infectious diseases routinely reported in the Ukraine. At the same time, some important infectious diseases were not included in the standard reporting forms; varicella and rubella were given as two examples. The reporting forms for diseases were believed to be inconvenient and not easy to use. As discussed above, for some diseases such as gonorrhea, underreporting is likely to be a very major issue. Some health officials believed that there was no unified scheme for analysis and presentation of data.

The health system in the Ukraine includes the preventive branch, characterized by the sanitary epidemiology stations, and the curative branch, characterized by the clinics and hospitals. Monitoring of infectious diseases is typically the responsibility of the preventive branch, while monitoring of noninfectious diseases is the responsibility of the curative branch. In addition to infectious diseases, some health officials interviewed were interested in improved surveillance data related to chronic diseases, including those related to cancer and cardiovascular disease. Environmental health data, including information related to air, water, and foodstuff quality, are also of interest.

Analysis by and feedback to the local levels appear highly variable. Feedback does occur, although the amount and content varied by oblast. The Ministry of Health publishes summary statistics on an annual basis. The MOH also releases monthly statistics about the occurrence of different infectious diseases, but this information is not published and is available only to the oblast SES. In Zhytomir, a weekly newspaper is received by all medical people in the oblast; this newspaper has been effectively used to transmit information about the health information system project and vaccine coverage rates. One national epidemiologist was very interested in also setting up a Morbidity and Mortality Weekly Report (MMWR)–style publication in the Ukraine, although how exactly it would contribute directly to improving management of public health services was not clearly explained.

**Conclusion: Disease surveillance includes the collection, analysis, and dissemination of data for the purposes of action.** Much of the attention of Ukrainian health officials focused on collection of data. Improvement in data collection, including development of standard case definitions, is reasonable. Ministry of Health or other national health officials could take a lead in this regard, convening consensus committees that would

include experts in different disease areas. It may also be useful to review the list of reportable diseases so that appropriate priorities can be established.

Potential areas for improved analysis and dissemination of data could also be explored. However, improvements at the national level will be of little benefit unless they are supported by good surveillance activities at the local level. Rather than monitoring the occurrence of all diseases in all persons throughout the country, alternative ways of collecting data could be explored. One alternative is to monitor diseases in a selected and representative random sample. This would allow for more specific diagnostic tests to be performed, and may be an alternative for the use of limited resources. Sentinel surveillance projects could also be set up to screen asymptomatic populations for carriage with infectious agents of particular interest. Scientists in the Diphtheria Laboratory at the Lviv Institute of Infectious Diseases were interested in conducting such studies to help determine the prevalence of toxin-producing strains of diphtheria.

**Any improvement in the surveillance system is of limited utility unless surveillance information is used for purposes of action. This is a major weakness in the Ukrainian surveillance system. The current system typically focuses on collecting information primarily for the purpose of collecting information, with limited discussion as to how it would be used. A more robust approach to surveillance includes action plans that respond to surveillance data, such as investigation of specific outbreaks and monitoring trends in development and evaluation of disease control programs.** Publications such as the MMWR include not only surveillance summaries, but also articles that include public health guidelines and recommendations.

### **Information Technology**

A repeated theme in many of the conversations was the need for additional computers at the local level, including raions. Certain donor agencies, such as Rotary International, have expressed interest in providing computers to the Ukraine. In the initial discussions concerning implementation of this project, there were differences of opinion concerning the role that computers would play. The decision was made to focus on use of the information for management, not on the introduction of information technology.

**Conclusion: There is no doubt that computers are useful tools, and that they have an important role in helping to facilitate data management and presentation. There are many benefits to making computers and other information technology widely available at the local level in the Ukraine.** One benefit is communication, including electronic mail to help health programs separated by large distances to communicate. A second benefit that cannot be underestimated is access to the Internet and other online information sources. This is particularly valuable in the Ukraine where there is limited access to international publications and other information resources; access to the Internet would also allow officials to see how other health information systems have been developed. A third benefit of improved access to information technology is more efficient data management, including data entry and retrieval. This has the advantage of making data available at the local level in a more timely fashion. Fourth, greater analysis can be performed at the local level. The initiative and enthusiasm of many health officials at the



raion and polyclinic levels was impressive. Making information technology available to these individuals could have benefits in a number of areas, including helping them to manage their resources more efficiently. Finally, making computers and other information technology available would help to generate good will at both the local and national levels.

However, it is important that the means and the ends not become confused. Although computers are very useful tools, they are not a substitute for a health information system or the information needs that such a system fulfills. Implementation of necessary information systems should not wait for the provision of computers. Conventional wisdom says that computers should always be supplied with an application so that the technology will be used. (This strategy does not always work.) In a European setting with advanced infrastructure and human resources, like the Ukraine, there are grounds for considering information technology as a basic infrastructure resource, like vehicles, that need to be available for the system to work. In North America and Europe, information technology is considered essential office equipment.

If computers are provided, there needs to be adequate provision for computer maintenance and other support, as well as training in basic computer literacy. **Decisions concerning software should be made based on a variety of considerations, including local needs and the degree of technical expertise.** For example, at the central level, sophisticated software for statistical analysis may be useful and appropriate. At a local level, software needs may be simpler, such as word processing and spreadsheets that allow individuals to summarize and graphically represent data.

### **Integrated Information System**

During the debriefing with USAID, the Mission discussed its desire to support the development of an integrated, single channel information system. The review team agrees that this is an ideal approach and had even investigated this possibility a bit at the oblast level. However, the situation is not optimal for introduction of this approach.

Management of health care is considerably fragmented in the Ukraine. There is bureaucratic fragmentation, producing parallel, but crosslinked, vertical reporting procedures. In recent years of economic crisis, oblasts have assumed more and more responsibility for financing health care. This has effectively decentralized operational management to the oblast level, with the national level functioning more and more as a policymaking and regulatory body. The relationship between oblast and national levels needs clearer definition. Some problems oblasts encounter in implementing national policy have been described in the preceding section on HIS to support disease control and prevention.

Recently, the World Bank, joined by other international agencies, including USAID, supported the findings of a recent functional review, which proposed a number of bureaucratic restructurings, including that a division for strategic planning be established within the MOH. (This proposal emerged from an earlier World Bank feasibility study on a national HIS; the study concluded that the management group who would use the

information needs to be in place first.) This bureaucratic change has apparently been accepted, but not yet implemented. The relationship between the planning division and other Ministerial divisions is not known, nor is the relationship between this division and oblast managers.

The World Bank has proposed supporting this process, and particularly the creation of a strategic planning unit, including information systems support. The information systems activities focus on national use of data for international comparisons. There appears to be an opportunity for expansion of this system for use at the oblast level. At the national level, the information would be used primarily for strategic planning. At the oblast level, the information would also be used for routine operational management. While these functions should not conflict, both need to be considered when developing the information system.

**Conclusion:** A decentralized model of health care management is emerging in the Ukraine. Development of an information system to support decision-making in this environment would be very valuable. However, **since the administrative and management organization of the reformed health care system has not yet been determined, it is premature to begin designing the integrated information system.**

**Several steps can be taken to support the MOH's more effective use of existing information.** At the national level, the nascent planning division could be provided with technical support for a rapid assessment of action-oriented information requirements and existing sources. A similar type of support could be provided at the oblast level. **These steps would provide positive assistance in both planning and operations, as well as provide useful input into the presumed next step of developing an integrated information system.**

#### **Involvement of International Agencies and Donors**

The Ukraine is an area of interest to many donors and other international agencies. Given limited resources and considerable needs, offers of outside financial and technical assistance are generally welcome. The team heard great appreciation to PATH for its contributions in helping to promote the health information system project. However, the involvement of multiple agencies with overlapping agendas may also lead to difficulties. There have been differences of opinion between CDC and other implementing partners on the best way to proceed; because of these disagreements, CDC did not play as full a role as originally planned.

When the partnership expands to include multilateral efforts, there may be an even greater chance for mutual misunderstanding. Processes to enhance transparency in decision-making should be explicitly articulated.

**Conclusion:** The involvement of multiple international agencies and donors represents a necessary but mixed blessing. Donors have different interests and funding sources, and lack of coordination can lead to duplication of services or competing priorities in a single area. Specific goals, strategies and assumptions

**should be agreed upon by the collaborators.** Projects supported by these agencies should result in long-term capacity and infrastructure building. The value of projects that are heavily dependent on large and continuing infusions of outside funding to be maintained, or those that require ongoing involvement of foreign personnel to be sustained, should be questioned. Projects that foster local sustainability and local capacity building are most desirable. In addition, projects that are introduced to combat diseases such as HIV, STDs or tuberculosis should be part of a comprehensive disease prevention strategy. This strategy should be clearly articulated, allowing donors to know how they fit into the big picture. This coordination will hopefully allow each agency to best contribute its expertise and resources. **The efforts of USAID to coordinate international donor agencies, with ideas for involvement coming from the local level, are commendable in helping to promote such cooperation.** Ideally, Ukrainian health officials will have significant involvement in helping to formulate the final plan. When multiple agencies are involved on a single project, it may be useful to have one organization identified as the lead, to help resolve conflicts that may arise.

#### **Collaborative Development of a Medium-Term Strategic Plan**

Development of a medium-term (five years) strategic plan can create a framework in GOU and donor investments in health care can be discussed, related to common goals, coordinated, and evaluated.

Development of a strategic plan would give the nascent strategic planning division credibility and a sphere of authority. Participation in this process gives direct input into the way information is used to support decision-making at the highest level. Such a plan is also necessary for oblasts to manage their resources to accomplish common national objectives. And a plan with objectively verifiable indicators of progress forms the backbone of any national HMIS.

The World Bank proposals for support of this aspect of health sector reform include support for strengthening management and infrastructure, specifically including information systems. However, the plan does not foresee support for the initial planning activities themselves. Certainly the planning process could be enriched by review of the approaches taken in other settings, and by technical assistance in this process.

**Conclusion:** Development of a medium-term strategic plan is a natural first step for the strategic planning unit. Creation of this plan will define the framework in which essential health care decisions are made, as well as the information that is used to support the decisions. **Support of the development of a medium-term strategic plan provides an opportunity to participate in crucial management decisions and to select the information used to guide them.** While this suggestion goes beyond the scope of work, it does illustrate that information is inextricably twined with the decisions it guides, and that the information system cannot be introduced until the management processes are defined.

#### **C. SUMMARY**

The success of the current health information system project is related to several factors:

- a demonstrable need,
- clearly defined objectives,
- implementation at, and transfer of ownership to, the local level,
- involvement of individuals from multiple disciplines,
- development of a specific product, with demonstrated results, and
- tangible and measurable outcomes.

The system was quickly adopted (and adapted) by managers at all levels to reduce vaccine wastage and contraindication rates and to improve timely immunization coverage.

Several specific areas were identified that would be suitable for extension of this approach to other health information systems. These included additional childhood vaccine preventable diseases and use of the DOTS strategy for tuberculosis. The field of HIV/AIDS is an important one, but lack of an overall strategy or approach represents an important constraint. If sentinel seroprevalence or other protocols to evaluate HIV rates are introduced, these may be opportunities for introducing appropriate information systems. Another option is to develop a health information system to support a program of perinatal HIV prevention, if the UNICEF–sponsored project is introduced. Although other diseases are important, specific opportunities were not identified for the introduction of health information systems. For example, the current status of STD control in the Ukraine seems to offer little opportunity for a health information system, without major changes in the way STDs are diagnosed and treated.

In summary, attempting to set up a health information system without agreement on the core strategies that this system is supporting is the reverse of what should be done. However, once these core strategies are identified, health information systems are highly valuable in helping to implement them, allowing for data to be used to make decisions, evaluate interventions, and manage resources efficiently. The success of the HIS project in improving immunization services and monitoring resource usage demonstrates the significant impact and benefit such systems can provide.

---

## ANNEXES

A: Scope of Work (from USAID/Ukraine).....	37
B: Review Team’s Terms of Reference.....	45
C: Persons Interviewed .....	47
D: Itinerary.....	51
E: Examples of HIS Analysis .....	55

---

---

---

---

**ANNEX A**

**SCOPE OF WORK**  
**(from USAID/Ukraine)**

---

**Scope of Work  
Evaluation of  
Health Information Systems (HIS)  
By Basics/PATH/CDC**

## **I. Purpose**

The purpose of this evaluation is to: (1) review the past performance of the Health Information System (HIS) activities being carried out by USAID Implementing Partners; (2) determine possibilities for the future direction of HIS with the incorporation of surveillance activities and the expansion to STDs/HIV/TB, (3) formulate recommendations on a preliminary design for program activities, (4) describe lessons learned and results achieved, and (5) make recommendations for future work, building on results and incorporating lessons learned.

## **II. Background**

Since late 1992, USAID has supported a range of infectious disease related programs in Ukraine. Many of these have been humanitarian efforts directed at procurement and delivery of vaccines and pharmaceuticals. Program for Appropriate Technology in Health (PATH) focused on diphtheria control and reduction of blood borne infections in Ukrainian health care workers. The Centers for Disease Control (CDC) provided technical assistance for epidemiological surveillance training. Technical assistance had been provided for the diphtheria epidemic through BASICS, PATH and CDC collaborating with the WHO. More recently, BASICS, PATH and the CDC worked to provide technical assistance to the GOU to strengthen its management of infectious disease prevention and control efforts by improving access to and utilization of accurate, appropriate, and timely health and management information. The program focused on local evaluation of needs and priorities, beginning with the Lviv oblast. Methods development, technical training, and local introduction of reforms followed. Information quality and information based management practices were addressed. Computer based data processing was not used, in favor of focusing on reforms that were sustainable regardless of the availability of high tech equipment.

In 1998, a Health Strategy was prepared and approved by the Mission to strategically guide its future assistance to Ukraine in the Health Sector. One of the activities determined to be important to the health of the Ukrainian population is management of infectious diseases. The goal of the infectious disease activity is to reform health management information systems in Ukraine, improving the capacity of health officials at the delivery level to effectively and efficiently manage and use public health information, particularly information regarding infectious diseases. In 1999, USAID/Kiev continues to target support for infectious disease control as part of its Intermediate Result IR3.2.1.2, “Strengthened health management information systems providing data for decision making” utilizing a national system of HIS data to procure vaccines, predict outbreaks of disease and conduct disease surveillance.



The primary focus of the program is the development of oblast level model health information systems (HIS) to be formally implemented in target oblasts. To ensure coordination with GOU national interests, a second focus at the national level involves key national counterparts in the overall development and implementation of the oblast-level HIS models.

The technical scope of the program focuses primarily on infectious diseases, primarily the development of a system that improves the collection, reporting, analysis and use of information related to vaccine-preventable diseases. Because of USAID's increased support and activities in global eradication of polio, surveillance indicators for polio (e.g. AFP surveillance) have been incorporated into the activities. The HIS is based on international standards adapted for local conditions (i.e. knowledge and skill levels, as well as available, sustainable technology).

### **III. Reported Results from PATH/Basics/CDC Activities**

- Development of a written strategy for replication of the oblast-level model HIS in Lviv Oblast to other sites in Ukraine.
- Implementation of an oblast-level model HIS in target oblasts.
- Introduction and adaptation of the immunization program monitoring and management information reforms, developed in Lviv, into two additional oblasts which represent different environments with regard to human and physical infrastructure, and public health priorities.
- Involvement of key counterparts within the GOU, and related non-governmental organizations, in development and implementation of the system.
- Continued strengthening of the Lviv system with particular emphasis on improving disease surveillance.
- Phased introduction of the new reporting forms and practices across Ukraine during FY 1999, planned and coordinated with the MOH.
- Completed an evaluation, assessing the effectiveness of the program and providing recommendations for nation-wide implementation and roll out
- Informed new participating oblasts and GOU officials about the progress and future capabilities of the project at a national conference in September 1998.
- Study tour providing epidemiological training at the Centers for Disease Control & Prevention for district level physicians.

### **IV. Overall Objectives of the Evaluation**

The overall objectives of the evaluation will be to:

- Identify, describe and quantify the results of the Ukraine Health Information Systems project to date, including success stories and lessons learned.
- Identify potential linkages with other USAID health programs, and other international donor programs.
- Identify potential opportunities for synergy and/or implementation of activities between the HIS Project and the Health Partnership activity being implemented by the American International Health Alliance (AIHA).
- Identify the potential to integrate STD/HIV/TB information and surveillance methods into a future HIS activity.
- Identify the potential for national sustainability of the system developed and tested in pilot oblasts.
- Identify major public health surveillance issues, the extent to which they have been addressed under the HIS program, and remaining needs.

## **V. Methods & Specific Tasks**

Prior to commencing field work, the awardee will prepare and submit a concise written work plan to USAID/Kiev two weeks prior to arrival in Ukraine, describing the specific activities to be undertaken, including site visits and a timeline.

- A. Technical Discussion: Provide a brief overview of what is currently known of the health status of Ukraine. This should include information regarding the existing health information system/surveillance, how information is being used to prevent and control infectious diseases, as well as for health planning and decisions regarding resource allocation.
- B. Review reports of the three activities which are the focus of this evaluation:
  - 1. Activities associated with the Program for Appropriate Technology in Health (PATH) in health monitoring and surveillance;
  - 2. Activities associated with the Participating Agency Services Agreement (PASA) with the Centers for Disease Control and Prevention (CDC) dealing with epidemiological training activities.
  - 3. Activities associated with Basic Support for Institutionalizing Child Survival (BASICS) in Ukraine.
- C. In collaboration with the Kiev Mission, ENI/DGSR/HRHA, G/PHN, specific tasks of the detailed review of the above named implementing partners include:
  - 1. Collect and review the work plan, BASICS contract and subcontracts to PATH and CDC.

2. Collect and review major periodic and special reports, action plans, etc. prepared by PATH, CDC, BASICS, the Mission and USAID/W. Interview relevant staff at CDC, PATH AND BASICS, associated with the project.
3. Carry out fieldwork evaluation in collaboration with PATH, CDC, BASICS and USAID/Kiev.
  - a. Contact Ukrainian professionals who participated in the project as identified by PATH, BASICS and CDC. This group should include USAID bureaus, Kiev Mission, participants and trainees, and other key beneficiaries and stakeholders.
  - b. Identify and contact Ukrainian professionals who participated in the project, such as deputy ministers, oblast health officials, and health care workers collecting and recording data.
  - c. Schedule and conduct site visits and interviews. This includes: financing and providing the logistics for the site visits, interviews and/or focus groups; attending previously planned workshops or conferences on the “primary focus” activities.
4. Analyze the information collected, including the development of clear and
5. specific findings, conclusions, lessons learned and recommendations.
6. Write the draft and final evaluation reports.
7. To the extent possible, the contractor will include local Ukrainian professionals who may be in position to influence and sustain future infectious disease related activities in Ukraine, such as deputy health ministers and oblast health officials.

The contractor is responsible for the results of this evaluation, including any need to modify the evaluation design, which may emerge once the task order has begun. The contractor will ensure that USAID/Kiev agrees with any changes in this SOW. No change in the overall level of effort or task order total is possible without written concurrence by the Contracting Officer.

- D. Proposed Activities: Describe the proposed activities necessary to accomplish the results requested in this work order.
- E. Time line: Include information or a chart illustrating the proposed timing of proposed work.
- F. Evaluation Plan: Provide a description of the evaluation plan and indicators to be used to evaluate the effectiveness of the program.

## **VI. Deliverables**

- A. Time Frame: It is suggested that the site visit occur in September for two weeks and that the final report be available 30 days later.

- B. Reports: The contractor will be required to maintain regular contact with the USAID/Kiev during the planning and execution of the evaluation. Before beginning the field visits, the contractor will prepare and submit a full field schedule and preliminary report outline.
- C. Provide a debriefing to the Kiev Mission Health Team about preliminary findings concerning conclusions and recommended next steps.
- D. An initial draft of the report will be due prior to departure from Ukraine and a final report will be submitted to USAID/Kiev and USAID/W within 30 days of receiving comments from USAID. The products expected from this work should include: An evaluation of results to date, and a synthesis of lessons learned. Also include a set of recommendations for Ukraine and the donor community, specifically based on the experience of implementing these USAID funded activities.
- E. Ten total copies of the report will be submitted to USAID/Kiev (5 copies) and USAIDW (5 copies) together with a diskette in MS6.1. The final report will contain a two to three page executive summary and will not exceed 25 pages plus annexes not to exceed 25 pages. In addition, copies of prior or existing evaluations may be submitted with the draft and final reports.

## **VII. Qualifications**

USAID/Kiev is requesting the services of two professional consultants to evaluate the Health Information Systems Project. The consultants must have a strong background in public health with an emphasis in epidemiology and/or health information systems. Experience with design and implementation of complex evaluations is required. Familiarity with the region and Russian/Ukrainian language skills are desirable. Additional support may include U.S. and Ukraine based administrative assistant/logistical coordinator. The facilitator should be someone experienced in working with international communications to provide logistical support by arranging transportation, hotels, meetings, and other arrangements, as needed.

## **VIII. Other**

- A six-day workweek is authorized for field team members as appropriate while conducting the field investigations, site visits, interviews.
- The team will conduct its evaluation under the technical guidance of USAID/Kiev and is requested to keep the Mission fully apprised of progress. The evaluation is intended to be forward thinking, constructive and collaborative. While assuring confidentiality, the contractor is requested to keep the lines of communication open and candid.
- Budget: Provide a simple functional budget illustrating cost by proposed activity.
- Utilize existing documentation, local experts, secondary project information, data studies, project documents and interviews to obtain information.
- Primary audience: USAID/Kiev and AID/W.

- The contractor will be fully self-sufficient for all logistical or support services, such as travel, communications, translation or interpreting services, scheduling, etc. The facilitator should be available for this purpose. USAID offices will cooperate fully with the evaluation and assist in identifying and providing appropriate documentation. USAID offices must be given one-week advance notice regarding making available documents for review.
- The USAID Mission will furnish the following documents prior to start-up of fieldwork to assist in the evaluation process:
  - 1998 Ukraine Health Strategy
  - Strategic Objective Performance Indicators
  - Results Tree
  - Previous evaluation by TVT
  - PATH, BASICS, CDC background documents



---

**ANNEX B**

**REVIEW TEAM'S TERMS OF REFERENCE**

---

### **Review Team’s Terms of Reference**

The Terms of Reference included five points:

1. Review the past performance of the Health Information System (HIS) activities being carried out by USAID Implementing Partners;
2. Determine possibilities for the future direction of HIS with the incorporation of surveillance activities and the expansion to STDs/HIV/tuberculosis;
3. Formulate recommendation on a preliminary design for program activities;
4. Describe lessons learned and results achieved; and,
5. Make recommendations for future work, building on results and incorporating lessons learned.



---

**ANNEX C**  
**PERSONS INTERVIEWED**

---

## Persons Interviewed

### USAID / Kyiv:

Marilynn Schmidt, Director, Office of Democracy and Social Transition  
Pamela Mandel, Deputy Director, Office of Democracy and Social Transition  
Eliot Pearlman, Senior Health Advisor  
Olena Radziyevska, Project Manager

### USAID / Washington:

Murray Trostle, Senior Public Health Advisor  
Emily Wainwright, Health and Child Survival Fellow

### BASICS:

Mark Weeks

### CDC:

Mark White

### PATH (Seattle):

David Mercer

### PATH (Kyiv):

Vivien Tsu, Deputy Project Director, Breast Cancer Assistance Project  
Dmitry Tyshchenko, Executive Operations Officer  
Anton Luchitsky, Program Manager  
Alexander Volkov, Program Associate  
Galina Romaniuk, Program Associate

### Ministry of Health, National - SES :

Sergiy Berezhnov, MOH Deputy Chief Sanitary Doctor  
Anatoly Padchenko, Deputy Chief of Main Sanitary-Epidemiological Department  
and Chairman of the Working Group on HIS Reform

### Ministry of Health, National – Department of Statistics:

M. Golubchikov.

### Kyiv Research Institute of Epidemiology and Infectious Diseases:

Alla Scherbinskaya, Head of the HIV/AIDS Department, and Head of the MOH  
Committee on HIV/AIDS.

### Ukrainian Institute of Public Health:

Yevgeny Dobroshtan, Member of the Working Group on HIS Reform

### Ukrainian Phtisiatry and Pulmonary Diseases Institute:

Vasyl Melnyk, Deputy Director  
in Lviv...

Ministry of Health, Lviv Oblast - SES :

Roman Pavliv, MOH Chief State Sanitary Doctor of Lviv Oblast

Angelina Rousyna, Head, Dept. of Epidemiology

Ministry of Health, Lviv Oblast – Medical Statistics:

Mykola Payenok, Deputy Chief Doctor; Head, Dept. of Statistics

Lviv Institute of Infectious Diseases:

Olena Gladka, Head, Laboratory of Diphtheria, and Member of Oblast Working Group on HIS Reform

Iryna Bortnytska, Member of Oblast Working Group on HIS Reform

in Kamianka-Buska Raion, Lviv Oblast.....

Raion SES and Clinical Care:

Alexander Martsynkovsky, Chief Sanitary Doctor

Sergiy Roubanov, Chief Epidemiologist and Member of Oblast Working Group on HIS Reform

Lesia Yourchuk, Chief Paediatrician

Ambulatory of Zheldets village:

Lyudmilla Skhap, Doctor

Feldsher-Acusher Point (FAP) of Batiatychi village:

Svitlana Grynykha, feldsher

NGO Salus, Lviv:

Alexandra Slouzhynska, Director

in Odessa...

Odessa Oblast Health Administration :

Valida Losieva, Head of the Administration

Yelena Godlevskaya, Chief Oblast Paediatrician

Alexander Sydiachenko, Head, Department of Epidemiology

Odessa Oblast SES :

Lyubov Zasyпка, Chief State Sanitary Doctor of the Odessa Oblast and Member of the Working Group on HIS Reform

Lyudmilla Krasnytska, Head, Dept. of Epidemiology and Member of the Working Group on HIS Reform

Galyna Shevchenko, Epidemiologist and Member of the Working Group on HIS Reform

Odessa AIDS Centre:

Oleg Penin, Chief Doctor.

Odessa City STD Clinic:

Ivan Fouchizhy, Chief Doctor.

Odessa Oblast Tuberculosis Dispensary:

Vitaly Filyuk, Chief Doctor.

in Ovidiopol Raion, Odessa Oblast.....

Raion SES and Clinical Care:

Tamara Soltyk, Chief Sanitary Doctor  
Lyudmilla Voitovych, Chief Epidemiologist  
Mykola Voitovych, Chief Paediatrician  
Country hospital of Bolshaya Dolyna village: Viktor Postov, Chief Doctor  
Feldsher-Acusher Point (FAP) of Baraboy village

in Zhitomyr...

Ministry of Health, Zhitomyr Oblast - SES and Clinical care officers:  
Alexander Volkov, Chief Oblast Sanitary Doctor; Galyna Redkina, Head,  
Dept. of Epidemiology; Rajissa Artyukh, Chief Oblast Paediatrician  
Central Zhytomir City Children's Polyclinic,  
Tetiana Petrenko, Deputy Chief Doctor; Valentina Makarenko,  
manager of the city vaccination program; Svetlana Popova,  
Maryna Beregova, and Olena Vargalyuk, heads of paediatric  
divisions.

Canadian Society for International Health:  
Olena Kurysko, Project Manager

Planning and Development Collaborative International (PADCO):  
Roger Vaughn, Resident Advisor

WHO:  
Dr. Yuriy Subbotin, WHO Liaison Officer

---

**ANNEX D**  
**ITINERARY**

---

## ITINERARY

### **November 1st, Monday**

Telephone interview with Mark Weeks, BASICS.

### **November 10th, Wednesday**

Meeting with Murray Trostle and Emily Wainwright, USAID Washington.

Telephone interview with David Mercer, PATH/Seattle.

### **November 12th, Friday**

Telephone interview with Mark White, CDC.

### **November 14th, Sunday**

*Arrival in Kyiv*

Orientation meeting with PATH officers and USAID HIS program officer. PATH attendees: Vivien Tsu, Dmitry Tyshchenko, Anton Luchitsky, Alexander Volkov, Galina Romaniuk; USAID: Olena Radziyevska.

### **November 15th, Monday**

Briefing with USAID officers. Marilynn Schmidt, Pam Mandel, Olena Radziyevska.

Meeting with Yevgeny Dobroshtan, Ukrainian Institute of Public Health, and Member of the National Working Group on HIS Reform.

Meeting with national SES officers: Sergiy Berezhnov, MOH Deputy Chief Sanitary Doctor; Anatoly Padchenko, Deputy Chief of Main Sanitary-Epidemiological Department and Chairman of the National Working Group on HIS.

Meeting with WHO liaison office : Yuriy Subbotin, WHO Liaison Officer.

Depart for Lviv.

### **November 16th, Tuesday**

*Arrive in Lviv.*

Meeting with oblast SES officers: Roman Pavliv, MOH Chief State Sanitary Doctor of Lviv Oblast; Angelina Rousyna, Head, Dept. of Epidemiology.

Meeting with oblast medical statistics department: Mykola Payenok, Deputy Chief Doctor; Head, Dept. of Statistics.

Meeting with Lviv Institute of Infectious Diseases: Olena Gladka, Head, Laboratory of Diphtheria, and Member of Oblast Working Group on HIS Reform; Iryna Bortnytska, Member of Oblast Working Group on HIS Reform.

Meeting with NGO Salus, to discuss management of STDs and HIV/AIDS: Alexandra Slouzhynska, Director

### **November 17th, Wednesday**

*Field trip to Kamianka-Buska Raion, Lviv Oblast.*

Meeting with Alexander Martsynkovsky, Chief Sanitary Doctor, Sergiy Roubanov, Chief Epidemiologist; and Lesia Yourchuk, Chief Paediatrician.

Facility observations:

Ambulatory of Zheldets village, Lyudmilla Skhap, Doctor

Feldsher-Acusher Point (FAP) of Batiatychi village, Svitlana Grynykha, feldsher.

Depart for Odessa.

### **November 18th, Thursday**

*Arrive in Odessa.*

Meeting with oblast Health Administration officers: Valida Losieva, Head of the Administration; Yelena Godlevskaya, Chief Oblast Paediatrician; Alexander Sydiachenko, Head, Department of Epidemiology.

Meeting with Oblast SES Officers: Lyubov Zasyпка, Chief State Sanitary Doctor and Member of the Working Group on HIS Reform; Lyudmilla Krasnytska, Head, Dept. of Epidemiology and Member of the Working Group on HIS Reform; Galyna Shevchenko, Epidemiologist and Member of the Working Group on HIS Reform

Discussion on HIV/AIDS care and information: Oleg Penin, Chief Doctor, Odessa AIDS Center.

Discussion on STD care and information: Ivan Fouchizhy, Chief Doctor, Odessa City STD Clinic.

Discussion on tuberculosis care and information: Vitaly Filyuk, Chief Doctor, Odessa Oblast Tuberculosis Dispensary.

### **November 19th, Friday**

*Field trip to Ovidiopol Raion, Odessa Oblast.*

Meeting with Tamara Soltyk, Chief Sanitary Doctor, Lyudmilla Voitovych, Chief Epidemiologist; and Mykola Voitovych, Chief Paediatrician.

Facility observations:

Country hospital of Bolshaya Dolyna village, Viktor Postov, Chief Doctor

Feldsher-Acusher Point (FAP) of Baraboy village.

Discussion on HIV/AIDS care and information: Oleg Penin, Chief Doctor, Odessa AIDS Center.

*Depart for Kyiv.*

### **November 20th, Saturday**

*Arrive in Kyiv.*

Work on report.

### **November 21st, Sunday**

Day off.

### **November 22nd, Monday**

*Travel to Zhytomir Oblast.*

Meeting with oblast SES and clinical care officers: Alexander Volkov, Chief Oblast Sanitary Doctor; Galyna Redkina, Head, Dept. of Epidemiology; Rajissa

Artyukh, Chief Oblast Paediatrician. Facility observations: Central Zhytomir City Children’s Polyclinic, Tetiana Petrenko, Deputy Chief Doctor; Valentina Makarenko, manager of the city vaccination program; Svetlana Popova, Maryna Beregova, and Olena Vargalyuk, heads of paediatric divisions.

*Return to Kyiv.*

**November 23rd, Tuesday**

Work on report and debriefing.

Meeting to discuss automation and record keeping experience: Planning and Development Collaborative International (PADCO), Roger Vaughn, Resident Advisor.

**November 24th, Wednesday**

Meeting with WHO liaison office to discuss tuberculosis strategy: Yuriy Subbotin, WHO Liaison Officer.

Meeting with MOH Department of Statistics: M. Golubchikov.

Work on report and debriefing.

**November 25th, Thursday**

Meeting with Ukrainian Phtisiatry and Pulmonary Diseases Institute: Vasyl Melnyk, Deputy Director.

Meeting with Kyiv Research Institute of Epidemiology and Infectious Diseases: Alla Scherbinskaya, Head of the HIV/AIDS Department, and Head of the MOH Committee on HIV/AIDS.

Work on report and debriefing.

**November 26th, Friday**

Meeting with Canadian Society for International Health: Olena Kurysko, Project Manager.

Debriefing with PATH team.

Debriefing with USAID.

**November 27th, Saturday**

*Depart for USA.*



---

**ANNEX E**  
**EXAMPLES OF HIS ANALYSIS**

---

### **Examples of HIS Analysis**

Four examples of the graphs used in HIS analysis have been included.

Graph 1: Polio 3 coverage : raions and towns in Lviv oblast, through September, 1999. Managers use graphs like this to identify areas that need further attention.

Graph 2: Coverage for main antigens as of September, 1999, in 3 pilot oblasts. Low coverage for Lviv for DPT and polio attributed to vaccine shortage. Low measles 2 coverage in Odessa is because oblast requires serology test before vaccination.

Graph 3: Utilization of polio vaccine: by quarter for 1999 in each pilot oblast.

Graph 4: Contraindication rate decrease: for months 1-9 in 1999, in each pilot oblast.